

AMENDMENTS TO THE CLAIMS

The following is a complete listing of revised claims with a status identifier in parenthesis.

LISTING OF CLAIMS

1. - 103. (Canceled)

104. (New) A piston-chamber combination comprising an elongate chamber which is bounded by an inner chamber wall and comprising a piston in said chamber to be sealingly movable relative to said chamber to at least between first and second longitudinal positions of said chamber,

said chamber having cross-sections of different cross-sectional areas at the first and second longitudinal positions of said chamber and at least substantially continuously different cross-sectional areas at intermediate longitudinal positions between the first and second longitudinal positions thereof, the cross-sectional area at the first longitudinal position being larger than the cross-sectional area at the second longitudinal position,

said piston including a piston body and sealing means supported by the piston body for sealing on said inner chamber wall, the piston body being designed to adapt itself and said sealing means to said difference cross-sectional areas of said chamber during the relative movements of said piston from the first longitudinal position through said intermediate longitudinal positions to the second longitudinal position of said chamber.

105. (New) A combination according to claim 104, wherein the cross-sectional area of said chamber at the second longitudinal position thereof is between 95% and 15% of the cross-sectional area of said chamber at the first longitudinal position thereof.

106. (New) A combination according to claim 104, wherein the cross-sectional area of said chamber at the second longitudinal position thereof is 95-70% of the cross-sectional area of said chamber at the first longitudinal position thereof.

107. (New) A combination according to claim 104, wherein the cross-sectional area of said chamber at the second longitudinal position thereof is approximately 50% of the cross-sectional area of said chamber at the first longitudinal position thereof.

108. (New) A piston-chamber combination comprising an elongate chamber which is bounded by an inner chamber wall and comprising a piston in said chamber to be sealingly movable relative to said chamber at least between first and second longitudinal positions of said chamber,

said chamber having cross-sections of different cross-sectional areas at the first and second longitudinal positions of said chamber and at least substantially continuously differing cross-sectional areas at intermediate longitudinal positions between the first and second longitudinal positions

thereof, the cross-sectional area at the first longitudinal position being larger than the cross-sectional area at the second longitudinal position,

said piston including a piston body and sealing means supported by the piston body for sealing on said inner chamber wall, the piston body being designed to adapt itself and said sealing means to said different cross-sectional areas of said chamber during the relative movements of said piston from the first longitudinal position through said intermediate longitudinal positions to the second longitudinal position of said chamber,

an elastically deformable material being adapted to adapt itself to the different cross-sectional areas of the chamber between the first and second longitudinal positions thereof, and

a coiled flat spring having a central axis at least substantially along the longitudinal axis of the chamber, the spring being positioned adjacently to the elastically deformable material so as to support the elastically deformable material in the longitudinal direction.

109. (New) A combination according to claim 108, wherein the piston further comprises a number of flat supporting means positioned between the elastically deformable material and the spring, the supporting means being rotatable along an interface between the spring and elastically deformable material.

110. (New) A combination according to claim 109, wherein the supporting means are adapted to rotate from the first position to a second position wherein, in the first position, an outer boundary thereof may be comprised within the cross-sectional area of the chamber in the first longitudinal position thereof and wherein, in the second position, an outer boundary thereof may be comprised within the cross-sectional area of the chamber in the second longitudinal position thereof.

111. (New) A pump for pumping fluid, the pump comprising:
a combination according to Claim 104,
means for engaging the piston from a position outside the chamber,
a fluid entrance connected to the chamber and comprising a valve means, and
a fluid exit connected to the chamber.

112. (New) A pump according to claim 111, wherein the engaging means have an outer position when the piston is at the first longitudinal position of the chamber, and an inner position where the piston is at the second longitudinal position of the chamber.

113. (New) A pump according to claim 111, wherein the engaging means have an outer position wherein the piston is at the second longitudinal

position of the chamber, and an inner position where the piston is that the first longitudinal position of the chamber.

114. (New) A shock absorber comprising:
a combination according to Claim 104,
means for engaging the piston from a position outside the chamber,
wherein the engaging means have an outer position where the piston is at the first longitudinal position of the chamber, and an inner position where the piston is at the second longitudinal position.

115. (New) A shock absorber according to claim 114, further comprising a fluid entrance connected to the chamber and comprising a valve means.

116. (New) A shock absorber according to claim 114, further comprising a fluid exit connected to the chamber and comprising a valve means.

117. (New) A shock absorber according to claim 114, wherein the chamber and the piston form an at least substantially sealed cavity comprising a fluid, the fluid being compressed when the piston moves from the first to the second longitudinal positions of the chamber.

118. (New) A shock absorber according to Claim 114, further comprising means for biasing the piston toward the first longitudinal position of the chamber.

119. (New) An actuator comprising:
a combination according to Claim 104,
means for engaging the piston from a position outside the chamber,
means for introducing fluid into the chamber in order to displace the piston between the first and the second longitudinal positions of the chamber.

120. (New) An actuator according to claim 119, wherein the means for introducing fluid into the chamber further comprise a fluid entrance connected to the chamber and comprising a valve means.

121. (New) An actuator according to claim 119, further comprising a fluid exit connected to the chamber and comprising a valve means.

122. (New) An actuator according to Claim 119, further comprising means for biasing the piston toward the first or second longitudinal position of the chamber.

123. (New) An actuator according to claim 119, wherein the introducing means comprise means for introducing pressurized fluid into the chamber.

124. (New) An actuator according to Claim 119, wherein the introducing means are adapted to introduce a combustible fluid, such as gasoline or diesel, into the chamber, and wherein the actuator further comprises means for combusting the combustible fluid.

125. (New) An actuator according to Claim 119, further comprising a crank adapted to translate the translation of the piston into a rotation of the crank.

126. (New) A piston-chamber combination comprising an elongate chamber and a piston in the chamber adapted to be sealingly movable relative to the chamber at least between first and second longitudinal positions of said chamber; wherein

the chamber includes a first cross-sectional area at the first longitudinal position which is greater than a second cross-sectional area at a second longitudinal position and at least substantially continuously differing cross-sectional areas at intermediate longitudinal positions between the first and second longitudinal positions,

the piston including an elastically deformable material for sealing on an inner chamber wall of the chamber and adapted to adapt itself to the different cross-sectional areas of said chamber during the relative movements of the

piston between the first longitudinal position and the second longitudinal position of the chamber.